MEDSPANISH
A Language Tool for the Emergency Department

Matthew D. Koff, M.S. and Julie J. McGowan, Ph.D.

Vermont Initiative for Rural Health Informatics and Telemedicine
University of Vermont College of Medicine
and Fletcher Allen Health Care
Burlington, Vermont

Language barriers frequently impede the ability of the health care professional to provide the highest quality heath care to his or her patients. Spanish speaking people are rapidly becoming the largest minority population in the United States. In order to facilitate access to appropriate medical care that would not be inhibited by miscommunication or lack of a trained translator, the MedSpanish Web Site was developed for use in the Emergency Department. The site contains common Spanish vocabularies, including translations and audio clips, that would be used in such a setting. The various sections are formatted so that they could easily become pocket cards rather than relying on the availability of a computer in a medical emergency. While MedSpanish is not designed to replace a trained translator, it does offer an effective alternative if such translations services are not available.

INTRODUCTION

The use of the World Wide Web for distributing text-based information has revolutionized access to knowledge. A large number of Americans, over 30 million, currently have Internet access from home. Computer terminals and workstations at employment sites are commonplace; this is particularly true in hospitals. The ability of the web to transmit text, pictures, and sounds inexpensively makes it an excellent new medium of communication. The possibility that it can serve as a temporary bridge between the health care provider and the patient, until a more effective means of communication can be achieved, is only now beginning to be explored.

In emergency settings, time is a limited commodity. Within the Emergency Department [ED], the ability to gain information and possibly to initiate life saving treatment is critical. Just as language can be a barrier to information transmission between the patient and the provider, the World Wide Web can be used as a tool to mitigate misunderstandings. Recognizing this potential, we have designed a WWW site for this function. The goal is not to take the place of a professional translator's service, but to facilitate communication if no resources are currently available or are delayed.

BACKGROUND

An estimated 31 million individuals in the US are currently unable to speak English. Most physicians and health care personnel have experienced the frustration of being unable to converse with, and obtain the information necessary from, to deliver appropriate medical care to their patients. Translators, the AT&T Translation Service, and family members are frequently used by hospitals to mediate a dialogue between the physician and his or her patient. The translators, though effective, are expensive and can be limited by qualifications of personnel and availability; if not on site, access to translation services can add significant time to the patient encounter. Phone translation services are impersonal and can be logistically difficult to use. It is impossible to predict when a patient will require a translator, which prohibits full time staffing at many institutions. Inexpensive resources such as textbooks, are useful but are limited in their distribution, and can be misplaced or lost during a time of need. Speech recognition software in the future may be the most effective means of communication if no

1091—8280/99/$5.00

translator is present, but the technology is currently still under development.

As we move into a global society, issues of language and culture have an increasing potential to negatively impact low-cost, quality health care. While these issues have been recognized in the U.S. and other countries, the appropriate solutions are not always evident. Community groups can be called upon to provide links between the patient and the provider, but these are not effective if the culture of the group does not match the culture [or language] of the patient. The use of family members to bridge the gap between patient and provider is only as effective as the willingness of the patient to divulge symptoms and medical conditions to the family member serving as the translator and the family member's ability to adequately translate the needs of the patient.[1]

Use of interpreters can assist in overcoming many language and cultural barriers. As mentioned, volunteers and family members have their own unique problems. Bi-lingual health workers are ideal, not only because they can communicate with the patient but also because they can understand the medical conditions which are driving the patient to seek help. However, such individuals are relatively rare. Trained interpreters are the next best option, but their availability is often only slightly greater than the bi-lingual health worker and their access can be complicated to arrange, even for the most routine visits.[2] In addition, personal interests or prejudices on the part of the interpreter might negatively impact an interaction among a health care provider and his or her patient.[3]

Another growing practice is the use of bi-lingual children to interpret for their parents. This, too, brings certain problems. Children frequently cannot understand the content of the questions that the health worker needs answered. Likewise, children frequently lack the emotional maturity to interpret questions dealing with certain details of anatomy and physiology that are routinely kept private from children until they reach a certain level of sophistication.[4]

Cultural issues can also be inhibitors to free and open communication. Medical students learn what questions to ask during the history and physical, but they frequently are less well trained in deciphering the cultural nuances of their multi-cultural patients. Such messages as avoiding stereotypes, developing a culture of trust, appreciating the patient's perspective and insuring that the treatment prescribed doesn't conflict with the patient's beliefs, as well as keeping an open mind, need to be stressed in medical education and reinforced throughout the medical career.[5]

The federal government protects patients who have cultural and language differences. The Civil Rights Act of 1964 is the basis on which subsequent federal and state legislation has been drafted, but provisions have also been made to support these mandates. For instance, service costs in hospitals can include translation services and are reimbursable under Medicaid and Medicare.[6] However, this does not help if there are no translation services available.

Cost is a driver in managed care and the problem with cultural and language differences can also be magnified in preventive services. Studies have shown that language barriers frequently inhibit non-English speaking people from accessing screening and other preventive services, even if these services are free.[7] In one recent study, an innovative use of a translation service, "remote-simultaneous interpretation," showed a marked increase in communication during well-baby visits of non-English speaking mothers.[8]

In emergency rooms, language barriers can present an even greater problem. Visits to the emergency room are unplanned. A patient's ability to provide the emergency department physician with critical information in a short period of time is essential to diagnosis and initiation of treatment. A patient's understanding both the diagnosis and treatment is essential to compliance and recovery. Interpreters can be beneficial in these situations, but for a variety of reasons, they are not frequently used.[9]

METHODS

In developing the MedSpanish Web site, a 1963 publication by Antonio Carbajo[10] was used as a template. Although this information was printed in 1963, basic word and sentence structure remains unchanged. New Webster's

Spanish/English Dictionary was also used for many words that were medically related and more current. Personal knowledge was utilized in some basic words and phrases. The category format employed is based on the Problem-Oriented Medical Record, used most frequently at the University of Vermont as a method of gathering patient information during an encounter.[11]

The material was typed into HTML format using the table function of Microsoft Word from *Microsoft Office '98.* This data was then exported into Bbedit version 3.5 for text editing and further HTML coding (Bare Bones Software, Bedford, MA). A Macintosh PowerPC computer Model 6400 was used with MacOS System software version 8.5.1 (Cupertino, CA). Sound files were recorded using the factory issued microphone, and were edited using SndSampler version 3.7.1 (A. Glenn, Midland MI). Sounds were initially recorded as AIFF files and then exported to the WAV file format. The WAV format is a Windows (Microsoft Corp. Seattle, WA) based sound format, and is the most widely accessible format based strictly on the current numbers of Personal Computer (PC) users. The computer files for the WWW page are located on VTMEDNET, a UNIX based server owned and maintained by Fletcher Allen Health Care Corporation (Burlington, VT).

The primary goal of the project was to make a widely accessible, user cost-free, effective means of communicating with a Spanish speaking patient in the Emergency Room setting, using both printed text and audio clips. Recognizing that facilitation of communication with the patient may also decrease waiting time until receiving care, MedSpanish was developed to improve the efficiency of the Emergency Department. VTMEDNET serves Vermont as a means to provide health information to health care providers throughout the state. This site furthers the goal as serving as a distance learning tool in the state wide comprehensive health information network.[12]

MedSpanish was designed to be used with minimally equipped computers so as to be available to anyone with internet access and a HTML capable Browser. The WWW site has been viewed and is functional on both Macintosh OS and Microsoft Windows based computers. Minimum system requirements are based on that of the Browser software. A color monitor is not a requirement. Although the sound feature can be beneficial, it is not necessary for use of the site. The text is in table format and is sufficient, especially if the user already has experience with the Spanish Language. The tables were formatted specifically to enable rapid printing of the pages rather than requiring access to a computer during the patient interview. Disclaimer material has been included on the Home Page as well as in a section "About MedSpanish." The content is periodically reviewed for accuracy and grammar by Faculty at the UVM Department of Language Arts. Necessary changes are easily made by editing the respective sections, another advantage of using a computer based medium rather than printed text.

RESULTS

The site is divided into areas that are currently used to obtain information for the History and Physical exam, such as: Chief Complaint (C/C), History of Present Illness (HPI), Past Medical History (PMH), Drugs, Allergies, Family History, Medicines, and terms useful when performing the actual Physical Exam. Other frequently encountered words have also been included such as numbers, dates, days of the week, family members' names, and both a Medical Condition Vocabulary list and a General Vocabulary section. Some common medical conditions frequently seen in the ED that require immediate intervention have been included in a section of specific Disease Based Questioning.

Some of these conditions include Respiratory difficulties, Neurologic difficulties, Cardiovascular complications, Obstetric difficulties, Allergic reactions, and Gastrointestinal difficulties, etc. These areas show the English word and, in table format, display the Spanish translation. A hyperlink under the Spanish word enables the user to listen to the word or phrase to assist in pronunciation. The pages have been designed so that an individual can print a section and take it to the bedside if no computer is available in proximity to the patient.

Translations and pronunciation for common medical problems in the site under Chief

Complaint include: chest pain, difficulty breathing, pain here (point), diarrhea, indigestion, stomach ache, constipation, cramp, backache, headache, neck ache, cough, ear ache, sore throat, rash, fever, etc. Some of the more generic phrases include: I am weak, I am nauseated, I am dizzy, I am cold, etc.

This site is available on-line and accessible worldwide. An example of one of the tables, Past Medical History, can be found in Figure 1. Although previous knowledge of Spanish is beneficial for the user, this site could be used by anyone who can read, speak and hear. Its effectiveness during actual patient encounters has been preliminarily assessed and is continues to be rigorously evaluated. The WWW is the most cost effective, easily accessible and reliable means for providing Medical Spanish in a clinical setting.

The site is available for viewing at the **URL:** http://www.vtmednet.org/medspanish As previously described, text was organized based on the Problem-Oriented Medical Record. An admission data section was included as a means of obtaining demographic information for admission (i.e., address, employer, next of kin etc.). Although this is not information frequently recorded by physicians, it could provide admitting personnel with information to begin the necessary clerical process of obtaining old medical records, etc., prior to the arrival of a translator.

EVALUATION

Efficacy studies such as "Moc" Patient encounters with standardized patients were undertaken to evaluate both the usefulness of the material and design format for usability. Three levels of clinical experience, ED attendings, medical residents, and medical students, were used. Formal training in Spanish was recorded as a yes or no response. Time recorded per encounter, user rated scale of comfort with the Spanish Language, accuracy of information was obtained, and patient feedback was recorded on a numeric scale from 1 (Poor) through 5 (Excellent). Groups were subdivided based on the three mentioned clinical designations and the data was analyzed for significance using Non-Parametric tests. Data are preliminary and the sample size is not sufficient for predictive conclusions, however several observational tendencies can be made.

The levels of clinical experience do not appear to have as significant an impact on the outcomes as prior familiarity with Spanish, even if the Spanish exposure was limited to one or two years in high school. The differences are mitigated when one uses the audio portion of MedSpanish on the WWW. However, the need to go to the computer adds time to the patient encounter.

The use of "standardized patients" has presented several obstacles. First, training has been problematic in that two standardizations have been necessary – both the understanding and communication of the problem and the reliance on the Spanish language as the primary communication vehicle. Secondly, it is imperative to differentiate among those "Moc" patients who can read Spanish and those who would be considered illiterate.

CONCLUSIONS

The problem with language and cultural barriers in the access to quality health care is increasing with the growth of the minority populations in the United States. The fastest growing of the various ethnic groups are those in the Hispanic populations. The MedSpanish WWW site effectively provides basic phrases, words, medical conditions, and areas for focused disease-based questioning during commonly encountered emergent conditions. While it should not be considered as a substitute for a trained translator, it does offer an alternative if such translation services are not available. MedSpanish was created to provide a tool to assist health care professionals in such situations.

Although efficacy of MedSpanish has not yet been fully evaluated, initial results are promising. Additional evaluation is currently being planned at a site using real Spanish-speaking patients in a non-emergent situation for comparative analysis. Additionally, work is currently underway to adapt part of the program to a 3 Com Palm Pilot for portability. It is hoped that in the future MedSpanish may serve as a prototype for a language tool to assist those in which a dialogue with their patients is difficult or impossible because of a language barrier.

REFERENCES

1. Overcoming culture and language barriers: Special report. The Practitioner, 240:403-6, 1996.
2. M Phelan, S Parkman. Work with an interpreter. BMJ, 311:555-7, 1995.
3. AH Brafman. Beware of the distorting interpreter (Letter to the editor). BMJ, 311:1439.
4. D Jones, P Gill. Breaking down language barriers: The NHS needs to provide accessible interpreting services for all (Editorial). BMJ, 316:1476.
5. LM Asta. Many lives, many cultures: Future physicians must meet the needs of an increasingly diverse population. The New Physician, 46N2:12-5, 1997.
6. S Woloshin, NA Bickell, LM Schwartz, F Gany, HG Welch. Language barriers in medicine in the United States. JAMA, 273:724-8, 1995.
7. S Woloshin, LM Schwartz, SJ Katz, HG Welch. Is language a barrier to the use of preventive services? J Gen Intern Med, 12:472-7, 1997.
8. JC Hornberger, CD Gibson, W Wood, C Dequeldre, I Corso, B Palla, DA Bloch. Eliminating language barriers for non-English-speaking patients. Medical Care, 34:845-56, 1996.
9. DW Baker, RM Parker, MV Williams, WC Coates, K Pitkin. Use and effectiveness of interpreters in an emergency department. JAMA, 275:783-8, 1996.
10. A Carbajo. UNTITLED, 3RD Ed. Washington, DC: GPO,1963.
11. JW Hurst, HK Walker (eds.). The Problem-Oriented System. New York: Medcom, 1972.
12. J McGowan, J Evans, and K Michl. Networking a need: A cost-effective approach to statewide health information delivery. Proc 19th Ann Symp Comp Appl

Past Medical History	
Have you ever had:	¿Ha sufrido de? {Go to Disease List}
What diseases have you had in your youth?	¿Que enfermedades tuvo usted cuando era joven?
When?	¿Cuándo?
Have you ever had an operation?	¿Ha tenido algunam operacion?
Have you ever been hospitalized?	¿Ha estado ingresado alguna vez?
Are you taking any medicines?	¿Esta tomando alguna medicina? {Go to Medicine List}
Are you allergic to any medicines?	¿Es alergico á alguna medicina?

Figure 1.